The Dispatcher

Telematics Industry Insights by Michael L. Sena

May 2018 – Volume 5, issue 8

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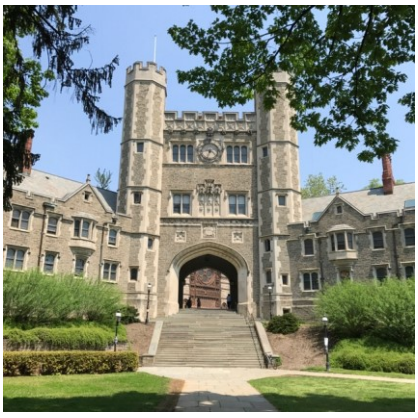
PRINCETON UNIVERSITY



On the 16th of May, the day before the Summit began, the skies were a pristine blue and the temperature reached 32C. I took the photo above of Blair Arch at around noon time on the 16th. Just before the reception at Alain Kornhauser's house was due to begin, the thunder rolled, the rain poured down and for the next two days, we did not have to worry about getting overheated by the sun. However, there were plenty of heated debates going on inside the Carl A. Fields Center where the Summit took place to make up for the cool and rainy weather outdoors.

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Princeton SmartDrivingCars Summit 2018

THE PRINCETON *SMARTDRIVINGCAR SUMMIT* is unique. Its uniqueness is the result of its setting in Princeton and its organizer, Dr. Alain L. Kornhauser, Professor of Operations Research and Financial Engineering, Director of the Transportation Program and Faculty Advisor to the Princeton Autonomous Vehicle Engineering (PAVE). Princeton has always been a place for both contemplative and collaborative thinking. Half-way between the New York City and Philadelphia metropolises, it is a small town that is both separate and connected to these urban areas, each less than an hour away, and the rest of the world.

This is the second year that the SMARTDRIVINGCAR SUMMIT has been held on the University campus and the first year I attended and participated. Having spent four undergraduate and three graduate years at the University, there is always a bit of nostalgia that is part of every return to the campus. This was no exception, but the nostalgia quickly gave way to all of the new stimuli from the one hundred or so delegates to the SUMMIT, all of whom had something to contribute.

The venue for the summit is the Carl A. Fields Center, with its excellent conference room. The delegates sat around round tables, rather than in rows, which made it less of a 'presentation to them' and more of a 'participation of us' event. We also incorporated working lunches into panel discussions on both days of the Summit. Dr. Kornhauser welcomed the delegates on the first morning. He was wearing his signature orange and white running shoes, reminding us that he is a 'move fast' kind of person.

I have known Alain since he was a first-year professor at Princeton and I was in my final year as a graduate student in the Princeton University Masters of Architecture and Urban Planning program. Our paths converged again when I was working with navigation systems and Alain's company, ALK Technologies[1]—which he ran in parallel to his academic duties—had developed

one of the first mobile phone-based personal navigation systems. We have kept in close contact since then. As the founder and head of PAVE, Alain has been a tireless proponent of 'smart driving cars'. His focus has been on finding ways to provide transportation for the underserved, including those who cannot drive themselves, cannot afford those transport alternatives that exist for them or who live in areas where neither public nor private forms of transport are offered for economic or other reasons.

SmartDrivingCar Summit Program

The Summit began on Tuesday evening with a reception at Alain's home, which is a two-hundred-year-old residence carefully and beautifully restored by Alain and his wife. The direct result of severe thunderstorm (see photo caption on Page 1) was that we were con-fined to the indoors, but that just meant we were in closer contact with the other guests and had a chance to meet and talk with more people.

The first day of the Summit consisted of a series of moderated discussions around presentations that lasted mostly between ten and fifteen minutes. Approximately 100 delegates sat at ten-person round tables, rather than in rows, so we had a chance to get to know more than the person to our right or left. During the lunch break, which we took back to our tables from a buffet, we had a one-hour panel discussion of state and federal public officials. At the end of the first day we took a short walk to another meeting room where there were refreshments and exhibits by the Summit sponsors. The evening closed with dinner at Prospect House, which up until the time of the global student sit-ins in 1968, was the home of the University's president.

Your editor (on the right) joined Fred Fishkin, Alain Kornhauser and Bernard Soriano in a recording of a post-Summit podcast. With Fred leading the session, we reviewed some highlights of the just concluded second annual Princeton SmartDrivingCar Summit. Bernard is the Deputy Director of the California Division of Motor Vehicles and is currently reviewing proposals from companies that want to test drive their cars without using a driver on California roads.

During the second day we broke up into three parallel workshops in the morning and three in the afternoon. The six workshops were:

- Near-term Deployment in the U.S.
- Insurance and Dealerships
- Sensors, AI/Software and Data
- Near-term Deployment in Europe and China
- Ride Hailing
- Metropolitan Planning

At the end of the second day, each workshop moderator presented the key findings, needs and actionable next steps from his or her workshop, and then Alain closed the Summit, inviting all of the delegates to the event in one year's time at around the same date and in the same place.

It is not possible in these pages to tell you what every one of the speakers said during the two-day Summit. There were fifty-six individual speakers, plus the six workshop leaders, and a few of the speakers had more than one opportunity to address the delegates. I will try to summarize the main points and overall themes of each of the sessions.

The speakers and their points of view

On the first day, Emily Carter, Dean of the Princeton School of Engineering and Applied Sciences, welcomed us to the University and to the Summit. She said it felt like we were on the edge of a dramatic transformation in which ubiquitous, on-demand personal mobility would replace what we have today and improve quality of life for everyone. Adam Jonas, Managing Director of Morgan Stanley's Research Division, delivered the keynote presentation and overwhelmed us with numbers. My favorite was his calculation of the amount of square footage in the trucks/boots of all the automobiles in the world. It is equivalent to 3,200 Empire State Buildings. How about that? And he reckons Amazon has figured that out (see page 4). He asked how many of the delegates owned an electric car. One raised their hand. If everyone owned an electric car we could never produce the electricity to drive them. If there are no accidents, one in five donor organs will not be available.

Alex Roy, the Cannonball Run Kid and founder of the Human Driving Association (which I joined on the spot) followed with an inspiring look at why folks drive. He was the first of many speakers who referred to the movie WALL-E, where humans no longer walk but are carried around by hovering robots. Car as identity; car as body; car as ritual and symbol of control. His message: rather than taking control from humans, create parallel systems that enhance the performance of humans.

Quote: "Tesla is a great car, but Tesla is a lousy company." Alex Roy

Matt Moore, Sr. VP of the Insurance Institute for Highway Safety explained that most accidents involving insurance claims were cars driving into the backs of other cars. The average claim for a rear-end collision when the car doing the hitting is travelling at 25 mph (40 kph) or over is $25,000. This drops to $5,700 when the car is driving at 12 mph (20 kph) or less. That's a big drop! The bottom line is that reducing speed before the crash—even if the car does not stop completely as everyone would like—makes a huge difference.

The first day's lunch panel was very interesting, with representatives from the California Division of Motor Vehicles, NHTSA and FMCSA (Federal Motor Carrier Safety Administration).

It was skillfully moderated by Professor Bryant Walker Smith of the University of South Carolina Law School. One suggestion I will make for next year's conference is to have more panels like this one and fewer speed-dating presentations. From the engagement and interchange with the delegates during the panel discussion, it is clear that it was highly appreciated. One interesting question: How does one perform compliance tests of vehicles that have none of the human-machine interfaces of today's vehicles (i.e., steering wheels, brakes, acceleration pedals, turn signals, etc.)?

The afternoon sessions were clustered under the title: Continuing to move the ball forward by those what have the most to gain: insurance, mobility providers and innovators. There was a lot of head scratching when Michael Scrudato, Executive VP, Munich Re, said that for every Dollar of automobile insurance they write, they lose $.08. That means every customer costs Munich Re $80/year. We never got around to finding out why or why Munich Re continues in the business.

Quote: "A data scientist is a statistician who lives in San Francisco." Michael Scrudato

I chaired a session on progress being made in Europe and China with self-driving technology. The Summit was very U.S.-centric, so this was a chance for most of the delegates to get a view over the Pacific and Atlantic oceans. Michel Parent from France reminded us that much of what we are trying to do now started back around 1990 with PROMETEUS in Europe. Professor Adriano Alessandrini from the University of Florence, informed us of progress on the CO-EXIST project for automated driving logistics. His main message is that if robots are going to take over the driving from humans they are going to have to drive as aggressively as human drivers in Rome. Jan Hellåker, Program Director of DRIVE SWEDEN, overwhelmed the delegates with what is happening in Sweden in all areas of vehicle automation. I have written about this in depth, and it is difficult to believe there is so much happening in such a small country—until you go there and see for yourselves. We had two presenters from China, one from the Beijing Institute of Technology, a stand-in for Professor Mei-Ling Yang, and Lawrence Lie, co-founder and CEO of Soterea. Government-sponsored competitions play an important role in which companies receive financial support to develop their solutions, similar to the DARPA sponsorship that got the autonomous vehicle ball rolling. This is in stark contrast to the Framework Programme in Europe and international cooperative projects.

The highlight of Day One's final session was the presentation by Matthew W. Daus, former Commissioner of the New York City Taxi and Limousine Commission. He was the person who presided over the management of those Yellow Cab Medallions while Uber began eating the taxi cab companies' lunch. He shared what he believes the taxi companies in New York City have learned from Uberization of their business:

- They should spend more money on lobbying;
- If you can't beat them, join them by developing your own app;
- Cut costs and services to survive a little longer, but cutting costs just makes the Ubers look better to customers.

Quote: "Taxis are not good, so let them disappear." Matthew W. Daus

Day Two and the Workshops

Either we chose one of the three parallel workshops held in the morning and afternoon, or we ran between the different locations to listen to the presentations that tickled our fancy. I chose the former strategy in the morning, listening to the U.S. Near-term deployment discussion. What I enjoyed about this session was that it focused on what might happen if we

ever have self-driving cars in large numbers in real communities and what practical uses we can make of vehicles that run themselves in limited areas for limited purposes. Shannon McDonald, Professor of Architecture at Southern Illinois University, encouraged to think about what we might do with the parking garages in cities that cannot be adapted to self-parking, self-fueling/charging vehicles. Another academic, Sam Lott of Texas Southern University, painted a picture of a city is huge today and will double in size in the next thirty years: Houston. He sees autonomous buses running on dedicated tracks (e.g., in the middle of highways) collecting residents, students and workers. Adriano Alessandrini reminded everyone that unless there was a way to actually make money, all of these ideas would turn into white elephants in the future.

Alain contributed to this session. He likes to say that self-driving buses are like elevators, and people will get used to them like they got used to elevators that open and close their doors and raise and lower themselves without the help of an elevator operator. Alain and I are both old enough to remember when all elevators had an operator who opened and closed the doors and turned the lever to make the elevator go up or down. I for one feel that elevator rides have never been the same since the men and women who welcomed us in and bid us adieu were made redundant. Hopeless sentimentalist.

It was during this session that a light glowing dimly in my mind brightened. Self-driving vehicles will replace transport solutions that exist today. At one time, those solutions were self-sustaining. They made money for their investors and operators. They stopped making money, or stopped making sufficient amounts of money to be worthwhile, when the value of the exploitable value diminished. Regular folks don't need cars or buses or trucks that drive themselves, just like we didn't need the Internet or iPhones or navigation systems. The take-away from this session—and my own workshop in the afternoon—was that we have to be clear about what solution we are replacing and why the replacement will deliver sufficient money to the investors and sufficient value to the users.

Vinn White, Senior Policy Advisor to the new Governor of New Jersey, Phil Murphy, a Democrat who succeeded Republican Governor Chris Christie, addressed the Summit during lunch. Clearly, Alain was delighted to have a representative from the Governor's office after eight years of a having a state government that showed little if any interest in the entire issue of smart driving cars. Vinn assured the Summit attendees that this governor was very interested in supporting the efforts of Princeton in this area.

I am certain I would have enjoyed listening to the two other workshops that ran in parallel to the one I moderated. The one on ride hailing was moderated by Matthew Daus. The main issue was how to best encourage ride sharing, which many of the delegates believe is the key to the profitable operation of self-driving vehicles. The third workshop of the afternoon was on metropolitan planning, and it was moderated by Jerome Lutin, retired NJ Transit Executive and a former graduate school classmate of mine at Princeton.

For our workshop on near-term deployment in Europe, we had additional presentations from Jacques Amselem, Head of Internet of Things for ALLIANZ, Wessel van der Pol, Applications engineer from 2GETTHERE, and Kurtis Hodge of LOCAL MOTORS. Jacques has twenty years of experience working with automotive telematics for Allianz, and he knows what works and why. Insurance companies have had isolated business units selling different types of insurance products to the same individuals with no communication or cooperation among the business units. The Internet has made it possible to put the customer in the

center and is enabling new types of services that combine different products. This will be good for the insurance companies that are challenged by new and different ways that mobility is being offered today, and for customers, who will be able to take advantage of the various synergies among the insurance products. Jacques does not see many changes in the insurance industry in the coming ten years, but sees major challenges with data sharing, meeting GDPR requirements and deciding who chooses the services that customers wish to have.

We had two presentations on small people-movers operating in defined areas and along designated pathways. LOCAL MOTORS had an additional twist: it is 3D-printed, making it possible to tailor the pods in each implementation to the specific needs of the environment and application. These solutions are being deployed now and are meeting specific needs. They are subsidized and operating with many restrictions to ensure that they are safe for those using them and those anywhere in their vicinity of operation.

This is a photo of the 2GetThere Brussels Airport Autonomous Shuttle that will begin operation in 2021 after testing starting in 2019.

Our workshop identified the following general findings:

- We need to build trust for using the automated systems;
- We need to accept that the technology is costly now, and will continue to be costly until there are enough deployments to lower unit costs;
- Security is an issue that requires more attention, especially when we begin to increase the connectivity of the systems to improve their performance; and,
- Technology is still in the early stages of development; we have a long way to go before we have the performance we need to provide safe and secure transport.

Summing it all up

Safe-driving and humanless-driven vehicles will not be able to solve every problem that we have today with human-driven vehicles. As an actionable next step, we need to determine what level of performance is good enough so that the vehicles will address and offer a potential solution to a specific problem. For example, if the objective is to increase accessibility of a group of residents, students or workers within an area or from one area to another without building more roads, define the costs of an alternative to what exists (or does not exist) today, what could be charged, what regulatory and certification issues have to be addressed and how the alternative solution compare to the current one.

Alain sent all of the delegates who were still there at the end off with the challenge to return in one year with reports on real progress on the actionable next steps we identified in our workshops. Those reports should be the first items on next year's agenda.

My additional suggestions are to engage the auto industry and do more to encourage their participation in the Summit. They may see the government- and academic-heavy program as a sign that the Summit is not for them, but it definitely is and they have a great deal to contribute. Also, there needs to be participation from Japan, where much is being done in this area.

Dispatch Central

GM Refocuses OnStar

WITHOUT A DRUM ROLL, fanfare or fireworks bursting in air, GM made an important announcement in May about the future of ***ONSTAR****. It is going to return to its focus on safety and security, where it started back in 1996, and turn over the other connected services to GM's brands: Buick, Chevrolet, Cadillac and GMC. ONSTAR says this is what its 15 million customers value most, the knowledge that if they have an accident or their car malfunctions in a dangerous location, there will be a human at the other end of the lifeline connected to a button within easy reach for them to press, or it will all happen automatically.*

With this decision, GM is admitting three things. First, ONSTAR has been extremely successful in establishing its brand name recognition in connected car services and it has been a money generator for the operation. Indeed, when the Great Recession hit and GM went into Chapter 11, it held on to ONSTAR because it generated cash. Second, GM's brands are still in the car-selling business, and connected car services are now helping to sell cars. Each brand will now tailor everything except safety and security. Third, safety and security are must have functions in all cars, and GM feels it can be best in class.

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Safe Testing by Toyota

TOYOTA RESEARCH INSTITUTE will have its closed-course test facility for automated vehicle technology ready by October of this year. On a site of approximately 60 acres (24 hectares) at the Michigan Technical Resource Park (MITRP) in Ottawa Lake, Michigan, TRI will be attempting to replicate all possible conditions encountered by cars driving on roads. They call them 'edge conditions'. In my opinion, unless you are driving in daylight with no glare or rain or fog on a divided, paved road in between interchanges with no other cars on the road and wild animal fences, everything is an 'edge condition'.

"This new site will give us the flexibility to customize driving scenarios that will push the limits of our technology and move us closer to conceiving a human-driven vehicle that is incapable of causing a crash," says Ryan Eustice, TRI Senior VP of Automated Driving.

The will include urban environments, slick surfaces, multi-lane highways with various types of interchanges. TRI also has closed-course testing at Mcity and American Center for Mobility in Michigan and GoMentum Station in California. This is how testing should be performed, not on public roads. Thank you, Toyota.

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BMW ETC. FORM MOBI

IN THE JULY 2017 issue of **THE DISPATCHER***, I wrote about Blockchain and its possible applications in the automotive sector. BMW, GM, Ford and Renault have grabbed one of the torches (Toyota, R3 and Hyperledger are the others) and are carrying it toward Olympus. Together with twenty-six other founding members, including Bosch and IBM, they have formed* ***MOBI****, the Mobility Open Blockchain Initiative. MOBI's stated goal is to make transportation safer, more affordable and more widely*

accessible. Nothing new here, but what are they doing to achieve these goals using blockchain technology?

Distinguishing it from other initiatives, MOBI is focusing entirely on the automotive space and its potential use cases, rather than viewing automotive as one of many other industries that can take advantage of blockchain solutions. Chris Ballinger, MOBI's chairman and CEO, says that "blockchain and related trust-enhancing technologies are poised to redefine the automotive industry and how consumers purchase, insure and use vehicles. By bringing together automakers, suppliers, start-ups and government agencies, we can accelerate adoption (of blockchain solutions) for the benefit of businesses, consumers and communities.

MOBI has defined the following use cases:

- *Digital identity and history location in space and time*
- *Supply chain*
- *Congestion fees*
- *Autonomous machine payments*
- *Mobility commerce platform driving data markets*
- *Carbon pricing*
- *Car and ride sharing*
- *Usage-based insurance*
- *Usage-based taxes*
- *Pollution taxes*

For the moment, this looks like a CV parking lot and an attempt by the car companies to pump up share values. Let's see if there is any substance to this effort in the coming months.

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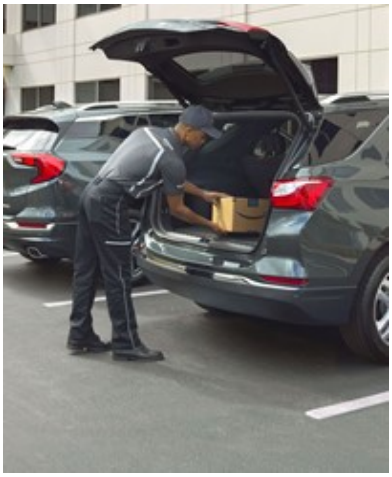
Package Delivery: Whom do you trust?

On the 24th of April, Amazon announced that it had reached agreements with GM and Volvo Cars to deliver packages to these cars by enabling them to be securely unlocked to allow the delivery personnel to place the ordered packages in the vehicle's boot/trunk and then to re-lock the vehicle. I have confirmed that in the case of Volvo Cars, the delivery person has a mobile app with which it communicates via the Internet with Volvo's telematics service provider (WirelessCar). Following verification that the delivery is authorized by both Amazon and the vehicle owner, the TSP sends a message to the telematics control unit in the vehicle to deliver instructions to the appropriate electronic control unit to unlock the vehicle. When the delivery is completed, the courier requests that the vehicle be re-locked.



To find the car, Amazon's couriers will have access to its GPS location and license plate number, as well as an image of the car. Initially, the service will only be available to Amazon Prime subscribers. It is limited to owners of GM and Volvo vehicles, model year 2015 or newer, with active OnStar and Volvo On Call accounts. Amazon says it plans to add other automobile brands over time. Packages that weigh over 50 pounds, are larger than 26x21x16 inches in size, require a signature, are valued over $1,300, or come from a third-party seller are not eligible for in-car delivery.

If you are going to let strangers enter your vehicle, it would be wise to make sure there is nothing visible that would entice a courier to stray from the straight and narrow and commit a theft. That should be relatively easy for a car, but what about inviting a delivery person into your home by allowing them to unlock your door? This is what is done with ***Amazon Key****. Why do this? For those of you who do not have packages delivered to your homes (Are there any such persons left?), if you are not at home when a courier arrives, either the package will be taken back to a distribution center, left at a pick-up location or simply placed on your doorstep. The last of these options is less than secure. During a visit to friends in the U.S., as I walked around the neighborhood, I saw piles of boxes on many porches. My friends said that they and their neighbors have all had packages stolen from outside their homes.*

An Amazon Prime customer in the U.K. opted for Amazon Key service. When he returned home, the door was locked, the package was inside, but his new puppy was missing. He tried to obtain the name of the delivery person to ask him or her if the puppy had run out when they opened the door. After two weeks with no replies from the local Amazon office, he sent an e-mail directly to Jeff Bezos. It turned out that the courier, who was not an Amazon employee but a contract driver, had picked up the puppy and taken him home. The puppy and rightful owner were eventually reunited. Although grateful, the owner vowed to use anybody but Amazon for deliveries in the future. The car trunk looks to me to be the better of the two options, don't you?

High-speed Rail: Luxury or Necessity

HIGH-SPEED RAIL is the latest cure for all the ills that ail the planet, according to the environmentalists. Along with battery electric vehicles—preferably those that drive themselves—we will eliminate pollution and congestion all in one fell swoop, they say. Is investing in trains that travel one-third the speed of an Airbus 380 and carry three times as many passengers, really the best way to spend tax payers' money? Is it a solution that fits every country, is it one that only makes sense in regions with extremely high population densities, like the Tokyo-Osaka corridor, or is it an expensive solution to a problem that could be better solved by other means? I would like to explore with you the questions and reach some preliminary conclusions.

Large transport infrastructure projects are generally good for a country's economy. Empirical trade economist and Stanford professor Dave Donaldson has studied the impacts of building the U.S. railroads in the 19th century and Interstate network in the 20th, as well as many other transport megaprojects. He found that investment in rail projects significantly reduced the costs of trading goods, increased the volume of goods shipped and that the economic benefits of increased railroad access greatly outweighed the construction costs. Analysis of results on the impact of the $26.6 billion in transportation funds allocated as part of the post Great

Recession American Recovery and Reinvestment Act (ARRA) showed that every $1 billion committed to transit and highway projects produced, respectively, 4.2 million and 2.4 million job hours.[2]

High-speed rail benefits trade between trading partners (cities, regions and countries) because it reduces the distance between trading partners in different regions by reducing the time of travel. The gravity model of trade shows that bilateral trade flows are directly proportional to the size of the two trading economies and inversely proportional to their distance from one another.[3] This model indicates that larger trading partners of similar size experience larger and mutually positive impacts than trade between smaller regions or between larger and smaller regions.

There is another important impact of building a high-speed rail line: prestige. Within the scope of competition for international recognition for technological accomplishments, having a high-speed train is an indication of a country's advanced status. This can have a direct effect on attracting foreign investment.

What is the true goal of high-speed rail?

The main problem with discussions for or against high-speed rail projects is that they focus on the costs for construction and operation of the trains, the economic benefits to the connected regions and the potential environmental consequences (which are often over-stated or unverifiable) for substituting the HSR for private transport with cars, commercial transport with trucks and both types of transport with planes. They do not begin with a thorough analysis of the long-term consequences for the areas in a region of a country that are not connected by the HSR lines, or the communities along the rail lines that are not stops or cannot connect with local trains. As trains get faster, they act more like air-planes, moving in straighter lines with larger radius curves and hopping over more inter-mediate stops. Instead of passing through the center of cities and using the existing major rail termini, they avoid high density, urban areas and skirt around them, just like planes fly over them.

The BEIJING-GUANGZHOU HIGH-SPEED RAIL LINE is a good example of how these projects are built. It is one of the longest HSR service lines in the world, stretching 2087 kilometers, connecting Beijing's 21.7 million inhabitants with Guangzhou's 14.2 million. It is designed for speeds of up to 350 km/hr., although its top speed is 313 km/hr. There are thirty-seven intermediate stops. The project specifications state that in order to "minimize disruptions to existing urban areas and provide large curve radii, the Beijing–Guangzhou high-speed railway, similar to other such railways in China, was constructed in an alignment some-what different from the existing Beijing–Guangzhou rail alignment." In other words, it is a completely new roadbed. That means that for most cities served by the high-speed rail-way, its trains stop at stations built specifically for the new line, which are away from the urban core and the city's existing railway station. In some of the larger cities, it may take more than an hour to ride a bus or taxi from the city centre to the high-speed rail station! (That sounds more like getting to and from a Ryan Air airport.)

The goal of HSR is to get as many people as possible from one major terminus to another. Intermediate stops along the way get in the way of achieving that goal, but these stops are

often the price the developers have to pay in order to make the line acceptable to the communities through which it passes. This is in stark contrast to the first railroads.

Railroads helped build nations of cities

The evolution of humanity is the story of cities. As we learned to communicate and cooperate with one another, we created larger and larger settlements that grew into the cities of the post-industrial revolution. They attracted more and more people from the countryside, but living conditions for all but the very wealthy were not ideal. Even the wealthy could not escape the stench of the open sewers that had once been rivers.

Railroads allowed cities to decant their populations into satellite communities at the end of the nineteenth century and gave them a chance to catch their breath, build sewer systems and other sanitary controls that began to make the cities livable for their inhabitants. Railroads also began to connect a country's cities to one another, improving communication and enabling even greater cooperation among a country's cities. Nations were born, and the railroad builders were very much a part of what happened around the points where their locomotives with goods and passengers stopped. They built offices, hotels and restaurants within and around the grand stations like the Delaware, Lackawanna and Hudson station in Scranton, Pennsylvania completed in 1911, an architectural masterpiece of its time.

When a journey could be combined with a fine dining experience along the way, which were common and affordable, and which are offered today on classic train lines for exorbitant sums, travel was also a pleasurable experience.

The objective of railroad builders was not only to connect large metropolises with each other, but to connect all of the smaller towns and cities along the way into a larger whole, to make these smaller settlements more attractive for development and then to further stimulate real

estate investments by making seed investments of their own. We can try to imagine what our nations might look like today without railroads, but I believe it would be a difficult task.

Motorized road vehicles and the roads that carried them extended the land area that could be used for further decanting. Cars and roads opened up more possibilities for real estate development, places where an investor could make large amounts of money by purchasing land that had low value as farmland or forest and building structures that could be sold or rented. Airplanes have done the same thing for places that have something to sell that cannot be exported, such as their historic sites, their natural beauty or their sun-drenched beaches. Where would Iceland be today without Iceland Air funneling trans-Atlantic travelers through Keflavik Airport and enticing people with low fares in return for making an overnight stay? Imagine Thailand without planes carrying holiday tourists there.

High-speed rail is attractive for investors precisely because it demands new rights-of-way where new real estate development can occur and where the low value of the land can be exploited. Intermediate stops are essential from a return on investment perspective because the major termini will most probably have to be in city areas where land values are already high. Even though the greatest benefit in speed reduction that could somewhat compare to travel by plane would be provided by an express line between the two major cities with no intermediate stops, it makes no economic sense. It also makes no sense from a nation-reinforcing sense either, unless a nation has decided that it will revert to being a country of cities and hinterland, like they were before the industrial revolution.

What's the verdict? Do we need HSR?

No, I do not believe so, not from a transport perspective. We can get there faster by plane and as comfortably by the slightly less high-speed trains that already connect most cities. For those cities that will be served by the new line, the existing stations will fall out of use and the real estate in their vicinity will experience a reduction in value as that value is transferred to the new station. For those communities that are not served by the new HSR, not only their station areas but their communities as a whole will see a value reduction since people and businesses that may have chosen to locate there will choose another location. HSR is definitely not a necessity for a nation nor for the majority of its citizens. It is another effective way to increase the value of land and exploit its potential. For some, that's a good enough reason for building them.

Musings of a Dispatcher: There's No Free Lunch

BEWILDERMENT WAS A WORD often used to describe the state in which the U.S. Congressmen and Senators found themselves when questioning Mark Zuckerberg on Capitol Hill in April. He had been summoned to appear before the Senate one day and the House Energy and Commerce Committee on a second day after it was learned that his company, FACEBOOK, had been complicit in delivering over 60 million records of individuals who had either participated in a survey of dubious legality or who were among the 'friends' of those who did. (It subsequently was found that the number was closer to 90 million, and Mr. Zuckerberg admitted he was among them.) What made the survey so problematical for the politicians wearing the **blue hats** of the Democratic Party was the fact that the results were used by a

British company called CAMBRIDGE ANALYTICA to help the politicians wearing the **red hats** of the Republican Party elect the person who is the current President of the United States. This was apparently orchestrated by Steve "Bannon the Barbarian" (his own appellation for himself), who was an executive of the British firm at the time.

"Tell me again, Mr. Zuckerberg, how is it that you rake in all that money but you don't charge us any fees to use your services? Take it slowly."

The bewildered must have suspected they were not getting a free lunch all the time they were using FACEBOOK. They are mostly old and experienced enough to know better. When I was in graduate school in the early 1970s and working on a project in Hoboken, New Jersey, I and a classmate—who is one of my regular readers of THE DISPATCHER—used to have lunch at the *Clam Broth House* (It closed in 2004 after a 105-year run). It advertised a "Free Lunch". The only problem was that in order to get the free food, you had to order a not-at-all-free beer. If you were going to drink a couple of beers at lunch it was worth it, although the food was marginal fare. It was then I understood the old saw: "<u>There's no such thing as a free lunch</u>."

"We see the buffet. Where's the beer?" the Congressmen and Senators kept asking. They were not very happy when they finally understood the answer. *"You mean you have a way to store all the clicks and clacks I make on my computer and smart phone, you make a profile of me and then you sell that information to people who want to sell something <u>to</u> me, including a future President of the United States? Is that what you are saying, Mr. Zuckerberg."*

"Yes, Senator/Congressman. I'm sorry, but that is the case. It's what we call our 'business model'. Please call me Mark. Did I say I was sorry?"

I don't use any social media programs. Except for a visitor account on LINKEDIN that I had for a few years, and closed a year ago after multiple hacks, I have made it a point to never, ever sign up for any 'free' services. My default search engine is BING, not Google. I do not use Google Maps or Waze. Nevertheless, when I do open my browser, I am hit with Viagra ads. *They know who and where I am*. Of course they do.

Social media is not without company when it comes to invasive business models. One of the most insidious implementations of a technology is free public Wi-Fi. This really does look like a free lunch. It definitely is not. I recently received an article by an academic claiming that the telecoms industry was against ITS-G5/WAVE (Wi-Fi-based) solutions to V2X because it did not fit their business models. So I began investigating how much it costs to deliver public Wi-Fi. I found an article by another academic, Benjamin Dean, Fellow for Internet Governance

and Cybersecurity at the School of International and Public Affairs, Columbia University. The article was titled “The Heavy Price We Pay for ‘Free’ Wi-Fi”.

In 2012, New York City started exploring ways to offer free public Wi-Fi as a way to replace public phones. It sent out an RFP, and the winning bid was submitted by CITYBRIDGE, a partnership of four companies, including TITAN OUTDOOR and CONTROL GROUP. They proposed building a network of 10,000 kiosks with Wi-Fi routers to deliver high-speed Internet, free phone calls within the U.S., free cell phone charging and a touch-screen map. The service was dubbed LINKNYC and is planned to generate about $500 million in advertising revenue for New York City during its first twelve years from the display of digital ads on the kiosks’ sides and via people’s mobile phones.

For the providers of the ‘free’ Wi-Fi services, they get paid by the advertisers who receive users’ personal and behavioral data, which are then used to target ads specifically to the users who pass by the kiosks and on their phones. According to Mr. Dean, the LINKNYC privacy policy “doesn’t actually use the word ‘advertising,’ preferring instead to vaguely state it ‘may use your information, including Personally Identifiable Information, to provide information about goods or services of interest’.” The Business Model. I suggest the kiosks play “Every breath you take” by The Police.

Will anyone be surprised to learn that in 2015, TITAN OUTDOOR and CONTROL GROUP were acquired by Alphabet’s (formerly Google) SIDEWALK LABS and merged into a company called INTERSECTION? SIDEWALK LABS’ CEO, Dan Doctoroff, serves as the Chairman of INTERSECTION. Doctoroff commented on the acquisitions and the new company: “By bringing these two industry leaders together, INTERSECTION will help make cities connected places where you can walk down any street and access free ultra-high-speed Wi-Fi, find transit and wayfinding information, access information about city services — the possibilities are endless.” Doctoroff was formerly CEO of Bloomberg and deputy mayor of NYC under Michael R. Bloomberg, so I am certain he knows his way around City Hall.

Yes, the possibilities for Alphabet/Google to collect and sell your data are indeed endless. SIDE-WALK LABS was founded in 2015. Alphabet says it is the company’s ‘urban innovation organization’ with a goal to ‘improve urban infrastructure through technological solutions, and tackle issues such as cost of living, efficient transportation and energy usage.’ A look at the company’s site shows that it is “engaged in thought experiments about what it could be like to develop a community ‘from the Internet up.” I hear The Stepford Wives is mandatory reading for all employees of SIDEWALK LABS.

Footnotes:

1. ALK Technologies was sold to Trimble in 2012, and continues as an independent corporate entity within Trimble's Transportation and Logistics division.

2. Transport Funding and Job Creation. Smart Growth America. (February 2011).

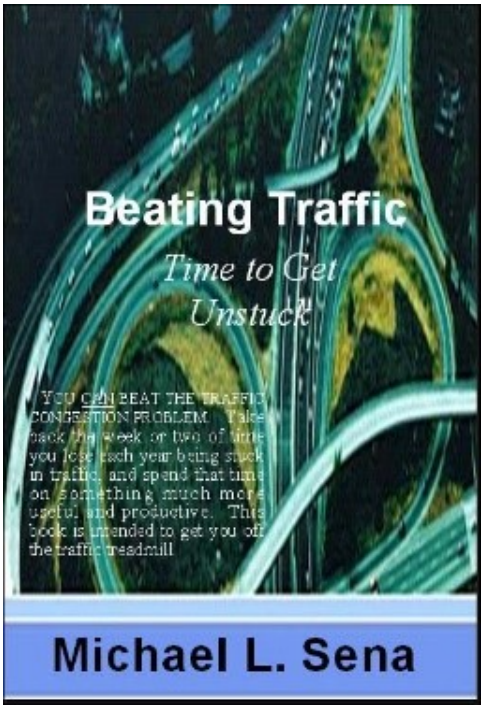
3. Lozano, E, Sena, M, et.al. Level of Services and Degree of Accessibility Spatial Urban Simulation Model. Regional Studies, Vol. 8 (1974)

Sena, Michael. Simulation of Alternative Educational Strategies, With a Case Study of School Provision in the Plan for Milton Keynes. Town Planning Review Vol. 47 (2 April 1976)

About Michael L. Sena

Michael Sena works hard for his clients to bring clarity to an often opaque world of vehicle telematics. He has not just studied the technologies and analyzed the services. He has developed and implemented them. He has shaped visions and followed through to delivering them. What drives him—why he does what he does—is his desire to move the industry forward: to see accident statistics fall because of safety improvements related to advanced driver assistance systems; to see congestion on all roads reduced because of better traffic information and improved route selection; to see global emissions from transport eliminated because of designing the most fuel efficient vehicles.

This newsletter touches on the principal themes of the industry, highlighting what is happening. Explaining and understanding the how and why, and developing your own strategies, are what we do together.



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